

sented by Mr. G. H. Tod-Heatley; a Rhesus Monkey ♀ (*Macacus erythraus*) from India, a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, deposited; a White-browed Amazon (*Chrysotis albifrons*) from Honduras, a White-headed Parrot (*Pionus senilis*) from Mexico, a Javan Parrakeet (*Ptilinopus javanicus*) from Java, two Chestnut-breasted Ducks (*Anas castanea*, ♂ ♀) from Australia, a Germain's Peacock Pheasant ♂ (*Polyplecton germaini*) from Cochinchina, a Black-throated Diver (*Colymbus arcticus*), two Oyster-catchers (*Haematopus ostralegus*) British, a — Deer ♂ (*Cervus* sp. inc.) from Patagonia, purchased; four Undulated Grass Parrakeets (*Melopsittacus undulatus*) bred in the Gardens.

OUR ASTRONOMICAL COLUMN

THE SATELLITES OF MARS.—The following Greenwich times of elongations of these satellites are taken from an ephemeris contributed by Prof. Pritchett to *Science* of November 26. At elongation *Deimos* is distant about 52" from the planet's centre and *Phobos* about 21"; the angle of position, 246°. 5h. 13m. are added to the Washington mean time, for difference of longitude and aberration-time:—

Deimos.

	h.	m.		h.	m.		h.	m.			
Dec. 30,	11	57	W.	Jan. 2,	15	36	E.	Jan. 4,	13	0	W.
Jan. 1,	9	20	E.	3,	6	44	W.	6,	10	24	E.

Phobos (W. elongations).

	h.	m.		h.	m.		h.	m.			
Dec. 30,	8	16		Jan. 2,	12	46		Jan. 5,	9	38	
	31	7	13		3	11	44		6	8	36
Jan. 1,	6	10			4	10	41		7	7	33

COMET 1881 g (SWIFT, NOVEMBER 16).—From observations between November 22 and December 12, Herr J. Palisa has calculated the following orbit of the comet: we express the elements in the form usual in the Catalogues:—

Perihelion passage 1881, November 19⁹⁹⁸⁷ Greenwich M.T.

Longitude of perihelion	...	...	...	63° 17' 57"	} M. Eq. 1881 ⁰ .
" ascending node	...	...	...	181° 21' 41"	
Inclination	...	...	...	35° 11' 54"	
Log. perihelion distance	...	...	...	0.284788	
Motion—retrograde.					

There is still a certain resemblance to the orbit of the first comet of 1792, discovered by Miss Caroline Herschel, as last calculated by Mechain, but the differences in the elements would not be accounted for by perturbation in the interval, so that it is probable the comets are distinct. Maskelyne's observations in 1791-92 will be found in his third volume in a form that will admit of a new reduction.

THE COMETS OF SHORT PERIOD.—No one of the known comets of short period is due at perihelion in the year 1882. The next to return may probably be that discovered by Tempel in July 1873, at the end of the year 1883, and about the same time D'Arrest's comet will be round again. Brorsen's comet follows in the autumn of 1884.

VARIABLE STARS.—The following are Greenwich times of heliocentric minima of Algol, calculated upon similar data to those used for Prof. Winnecke's ephemeris for 1881:—

	h.	m.		h.	m.		h.	m.
January 3,	16	18.9	January 12,	6	45.5	January 29,	11	38.9
6,	13	7.7	23,	18	1.1	February 1,	8	27.8
9,	9	56.6	26,	14	50.0			

Minima of S Cancri occur on January 19, at 13h. 1m., and February 7, at 12h. 16m. A maximum of the "crimson star" R Leporis may be expected about January 19; the period from the last fifteen years' observations is close upon 436½ days.

We may once more draw attention to the star with which Encke's comet was compared by Rümker at Paramatta on June 19, 1822, and which is certainly variable to a considerable extent. Rümker estimated it between the fourth and fifth magnitude; Gould says 6⁰ in the *Uranometria Argentina*; the star is 6.5m. in the *Durchmusterung*, but has been several times noted as low as the eighth magnitude: perhaps systematic ob-

servation may show that the period is not a long one. The position of this star for 1882⁰ is in R.A. 7h. 23m. 21s., N.P.D. 91° 39' 8".

GEOGRAPHICAL NOTES

INFORMATION has been received from Tromsø which augurs well for the success of Mr. Leigh Smith's present voyage. Capt. Isaaksen, of the Norwegian whaler *Proven*, saw the *Eira* on June 30 at Matushin Straits at the edge of the ice, a few miles from the coast. On July 2 he again saw the *Eira* steaming southward, and he concludes that Mr. Smith failed to force his way along the coast of Nova Zembla. It is supposed that he again failed to pass Kara Straits, as he was afterwards seen bearing north from Gooseland. Capt. Isaaksen says that the ice was in about its usual position in June and July, but on August 8 it had all gone, he did not know where or how. On the 16th of that month there was no ice twenty miles north of Nova Zembla, but a heavy sea was running from the north. This conclusively shows that the sea was open for a very considerable distance, probably as far as Franz Josef's Land, which Capt. Isaaksen feels certain Mr. Smith has reached, and in such circumstances he would not be astonished if tidings came of his having reached a point very much nearer the North Pole this year. As might have been expected, the Russian Government and Mr. Gordon Bennett are doing everything possible to succour the people of the crushed *Jeannette*; we hope they will soon be all safe in Western Europe.

DR. STECKER, the companion of Dr. G. Rohlfs, writes on June 21 to the editor of *Petermann's Mittheilungen*, from Debra Tabor, on the results of his last journey to Lake Tana. He has explored all the lake, visited the mountains on its shores, and prepared a detailed map of this basin, which covers a surface of 2980 square kilometres, the level of which is 1942 metres above the sea, and which is 30 to 72 metres deep. The map will be the more welcome as Dr. Stecker says that all former maps of the Gorgora Mountains, situated north of the lake, and of its southern shores, are quite wrong. Dr. Stecker is satisfied with the reception he received during his journey from the native rulers, and especially from the Negus, who promises to let him go to Kaffa. During his stay at Lake Tana Dr. Stecker made interesting collections of plants, insects, fishes, and molluscs, and he discovered in the Gorgora Mountains unmistakable proofs of volcanic activity: eruptive cones, a crater, and a mighty lava stream, all probably recent, as in the volcanic rocks, he has found inclosed remains of a mollusc which still inhabits the waters of Lake Tana. After the end of the rainy season he proposes to explore the negro tribes who live west of Lake Tana, and then to travel either to the mouth of the Juba River or to Zanzibar *via* Lake Samburu, Mounts Kenia and Kilimangaro.

THE expedition led by Lieut. Holm, and sent out early in the summer by the Copenhagen Commission for the geological and geographical investigation of Greenland, has just returned. The expedition proceeded to the southernmost part of Greenland; they succeeded in circumnavigating the large islands on the southern coast, and in determining the exact position of Cape Farewell. The land itself was investigated as far as line drawn from the Tasermint Fjord on the west coast, to the Lindenows Fjord on the east coast. It contains magnificent alpine scenery with enormous glaciers, particularly on the western side. The low-lying eastern part is covered with a layer of ice and snow, which forms hills and valleys, following the soil underneath; here and there mountain peaks rise above the immense winter landscape.

THE *Oesterreichische Monatsschrift für den Orient* for November contains a paper by von Hellwald on the Gilyaks of Eastern Siberia. They inhabit the districts of the Lower Amour, the coast of the Straits of Tartary, and the northern part of Saghalin. Estimates of their numbers vary from 8000 to 3000. Col. Wenjukow thinks they form a special branch of the yellow race, but not a subdivision of the Tungusic stock. Their language, he says, has no resemblance to the Tungusic, and their physiological structure betoken a more powerful and energetic race than the neighbouring Magyars, Samagry, &c. Ravenstein also distinguishes the Gilyak tongue, which is rich in monosyllables, from the Tungusic, and others distinguish it from the Aino, with which it has been sometimes connected. They are said to have oblique eyes, prominent cheek-bones, and scanty beards; the

hair is dark and thick, the nose flat, and the chin pointed. A skull which Barnard Davis succeeded in sending to England was found to have a capacity of 1638 cubic centimetres, with horizontal and vertical indices of 77.3 and 78.3 respectively. They have the reputation of being a bloodthirsty and inhospitable people, but they have now succeeded better than any of the neighbouring tribes in drawing closer to the Russians. They frequently change their paganism for the Russian Orthodox Church. The Japanese, with whom they traded in the southern part of Saghalin, have had no great influence over them. Sometimes they live in houses which are built on piles raised some distance above the ground, with a platform, or balcony around, on which they lay their sledges, nets, &c. From the roof are suspended hundreds of salmon, put there to be smoked and dried. The men pass most of the time away from their families, fishing or hunting. They are especially fond of the dolphin, but as they have but bad weapons of the chase, they rarely succeed in catching this fish. When they do, however, the occasion is kept as a festival. As with most of the aborigines of North-Eastern Asia, they reverence the bear as a divinity, but it is nevertheless almost invariably slaughtered. Their proceedings at the festival of the bear resemble those of the Ainos of Yezo, drunkenness being the order of the day. The religion of the Gilyaks is Shamanism with all its superstitions. They will allow no one to take a spark of fire, even in a tobacco-pipe, from their huts, believing that ill-luck and misfortune will follow. The bodies of the dead are burned, and a small house erected above the ashes, while a favourite hound is slaughtered on the grave. The Gilyaks in Saghalin differ in some respects from those on the mainland. Their mode of living differs little from that of the Ainos. Marriage is not permitted among members of the same family; wives are purchased, but also captured. The Japanese traveller, Mamia Rinso, who thoroughly examined the whole of Saghalin and the neighbouring coast about the beginning of this century, says that polyandry existed amongst them. They are the most superstitious of all the Tungusic tribes in the Amour region, as well as the most cruel in their customs.

THE United States war-steamer *Palos* has been engaged for some time past, by order of the American Government, in carrying out a series of observations in China and Japan with the object of ascertaining the correct latitude and longitude of certain important points. The position of Wladivostock was determined by Russian engineers some years ago, and the object of the present expedition is to settle those of the chief centres between that place and Madras, *e.g.* Nagasaki, Amoy, Shanghai, Hongkong, and Singapore. The positions of the first three have been determined, and it is said do not show any great discrepancy with those hitherto accepted.

THE December number of the Geographical Society's *Proceedings* opens with Mr. F. A. A. Simons' paper on the Sierra Nevada of Santa Marta and its watershed, accompanied by a good map of the region from his own survey. Mr. Delmar Morgan contributes a paper on steppe-routes from Karshi to the Amu-daria, being an annotated rendering of one by M. Maief in the Russian Geographical Society's *Izvestia*. In the Geographical Notes the new Russo-Chinese frontier is described, and there is an interesting note on the old map of Djungaria by the Swede Renat, recently discovered in the library of Linköping. M. Wiener's discovery of the Samiriá tributary of the Upper Marañon is also referred to, and it is stated that he has constructed a map of this almost unknown region. Perhaps the most interesting item in the whole number is the short letter from Capt. Gray, of Peterhead, on the recent advance of the Polar ice in the Greenland and Spitzbergen Sea, with its accompanying ice-chart. A long report on the Venice Congress and Exhibition is furnished by Capt. A. W. Baird, R.E., and is the only one, so far as we know, which has yet been published.

THE last *Bulletin* of the Commercial Geographical Society of Bordeaux contains some notes on M. Ch. Wiener's extensive explorations on the tributaries of the Upper Amazon by a Peruvian, Sr. M. Alborno, and observations by M. Raackelboom on the country, &c., between Susa and Kairwan.

DR. LENZ ON THE SAHARA

IN a paper which Dr. Oscar Lenz contributes to the *Zeitschrift* of the Berlin Geographical Society, he gives an authentic account of the results of his journey across the Sahara, from Tanger to Timbuktu, and thence to Senegambia. The real jour-

ney was begun at Marrakesh, at the northern foot of the Atlas Mountains, where Dr. Lenz laid in his stores of provisions and changed his name and dress, travelling further under the disguise of a Turkish military surgeon. He crossed the Atlas and the Anti-Atlas in a south-western direction. The Atlas consists, first, of a series of low hills belonging to the Tertiary and Cretaceous formations, then of a wide plateau of red sandstone, probably Triassic, and of the chief range which consists of clay-slates with extensive iron ores. The pass of Bibanau is 1250 metres above the sea-level, and it is surrounded with peaks about 4000 metres high, whilst the Wad Sus Valley at its foot is but 150 metres above the sea. The Anti-Atlas consists of Palæozoic strata. On May 5, 1880, Dr. Lenz reached Tenduf, a small town founded some thirty years ago, and promising to acquire great importance as a station for caravans. The northern part of the Sahara is a plateau 400 metres high, consisting of horizontal Devonian strata which contain numerous fossils. On May 15 Dr. Lenz crossed the moving sand-dunes of Igidi, a wide tract where he observed the interesting phenomenon of musical sand, a sound like that of a trumpet being produced by the friction of the small grains of quartz. But amidst these moving dunes it is not uncommon to find some grazing-places for camels, as well as flocks of gazelles and antelopes. At El Eglab Dr. Lenz found granite and porphyry, and was fortunate enough to have rain. Thence the character of the desert becomes more varied, the route crossing sometimes sandy and sometimes stony tracts or sand-dunes, with several dry river-beds running east and west between them. On May 29 he reached the salt works of Taudeni, and visited the ruins of a very ancient town, where numerous stone implements have been found. Here he crossed a depression of the desert only 145 to 170 metres high, while the remainder of the desert usually reaches as much as 250 to 300 metres above the sea-level; and he remarks that throughout his journey he did not meet with depressions below the sea-level. The schemes for flooding the Sahara are therefore hopeless and misleading. The landscape remained the same until the wide Alfa fields, which extend north of Arauan. This little town is situated amidst sand-dunes devoid of vegetation, owing to the hot southern winds. Four days later Dr. Lenz was in Timbuktu, whence he proceeded west to St. Louis. During his forty-three days' travel through the Sahara Dr. Lenz observed that the temperature was not excessive; it usually was from 34° to 36° Celsius, and only in the Igidi region it reached 45°. The wind blew mostly from north-west, and it was only south of Taudeni that the traveller experienced the hot south winds (*eddrash*) of the desert. As to the theory of north-eastern trade-winds being the cause of the formation of the desert, Dr. Lenz remarks that he never observed such a wind, nor did his men; it must be stopped by the hilly tracts of the north. Another important remark of Dr. Lenz is what he makes with respect to the frequent description of the Sahara as a sea-bed. Of course it was under the sea, but during the Devonian, Cretaceous, and Tertiary periods; as to the sand which covers it now, it has nothing to do with the sea: it is the product of destruction of sandstones by atmospheric agencies. Northern Africa was not always a desert, and the causes of its being so now must be sought for, not in geological, but in meteorological influences.

SCIENTIFIC SERIALS

Journal of Anatomy and Physiology, vol. xvi., part 1, October, 1881, contains—Dr. D. J. Cunningham, on the relation of nerve-supply to muscle-homology.—Dr. Gibson, the action of duboisia on the circulation.—J. F. Knott, the cerebral sinuses and their variations.—Dr. G. Barling, primary growth from bone, resembling in some of its features scirrhous carcinoma of the breast.—Doctors George and F. Elizabeth Hoggan, the comparative anatomy of the uterine lymphatics (plates 1 and 2).—Dr. H. Ashby, transposition of the aorta and pulmonary artery in a child of seven months.—Dr. W. Stirling, some points in the histology of the newt, and on the nerves of the lungs of the newt (plates 3 and 4).—Dr. Garson, on pelvimetry (plate 5).—Prof. Turner, cranial characters of the Admiralty Islanders.—Report on physiology, and anatomical notes.

The American Naturalist for November, 1881, contains: W. K. Higley, on the general and microscopical characters of the peach tree affected with the "yellows."—W. H. Dall, on the so-called Chukchi and Namolló people of Eastern Siberia.—W. H. Edwards, the length of life in butterflies.—H. D. Minot, notes on the migrations of birds.—V. Havard, on Sotol.—E.